IN THE CLAIMS

The following is a complete set of claims pending with this response. No amendments have been made.

1. (Original) A method, comprising:

receiving a filter parameter at a satellite in orbit;

receiving an input signal at the satellite; and

programming a filter in the satellite to separate a plurality of sub-signals from the input signal based on the filter parameter.

2. (Original) The method of claim 1, wherein the filter parameter comprises at least one of a high frequency limit for the input signal, a low frequency limit for the input signal, a median frequency to separate a first sub-signal from a second sub-signal within the plurality of sub-signals, and a set of frequency boundaries for each of the plurality of sub-signals.

3. (Original) The method of claim 1, further comprising:

filtering the input signal into the plurality of sub-signals as programmed based on the filter parameter;

translating the plurality of sub-signals into an output signal; and

transmitting the output signal from the satellite.

4. (Original) The method of claim 3, wherein:

the input signal comprises an uplink from a plurality of earth stations to the satellite, said plurality of earth stations comprising a gateway and a user station;

the output signal comprises a downlink from the satellite to the plurality of earth stations; and

the plurality of sub-signals comprise a first sub-signal and a second sub-signal, wherein the first sub-signal comprises a forward link from the gateway to the user station, and the second sub-signal comprises a return link from the user station to the gateway.

5. (Original) The method of claim 3, further comprising:

applying different gain amounts to selected ones of the plurality of sub-signals.

6. (Original) The method of claim 3, wherein the plurality of sub-signals include a first sub-signal and a second sub-signal, and wherein translating the plurality of sub-signals comprises:

multiplying the first sub-signal by a first number to produce a first amplified signal;

multiplying the second sub-signal by a second number to produce a second amplified signal, said second number being different from said first number; and

adding the first amplified signal and the second amplified signal.

7. (Original) The method of claim 3, wherein filtering the input signal comprises:

sampling the input signal at a sample rate to produce a sample stream;

quantizing each sample of the sample stream into a particular number of bits; and

processing the sample stream into the plurality of sub-signals.

8. (Original) The method of claim 3, wherein the input signal comprises uplinks from a plurality of beams and the output signal comprises downlinks to the plurality of beams, and wherein translating the plurality of sub-signals into the output signal comprises:

switching the plurality of sub-signals from particular uplinks to particular downlinks.

9. (Original) The method of claim 8, wherein switching the plurality of sub-signals comprises assigning at least one of the plurality of sub-signals received from an uplink corresponding to a particular beam to a downlink corresponding to a different beam.

10. (Original) The method of claim 1, further comprising:

receiving an original signal at the satellite, said original signal having a first center frequency and a first bandwidth; and

down-converting the original signal to the input signal, said input signal having a second center frequency equal to one-half of the bandwidth plus a frequency margin, and said input signal having the first bandwidth.

11. (Original) The method of claim 1, further comprising:

receiving a first signal at the satellite, said first signal having a bandwidth;

down-converting the first signal to a first intermediate frequency (IF);

filtering the down-converted first signal so as to produce a plurality of N intermediate signals, each of the intermediate signals having 1/N of the bandwidth; and

down-converting each of the intermediate signals to a plurality of component signals, said plurality of component signals including the input signal, each of the component signals having a high frequency equal to 1/N of the bandwidth plus a frequency margin, and each of said component signals having 1/N of the bandwidth.

12. (Original) An apparatus, comprising:

a satellite adapted to receive a filter parameter; and

a programmable filter within the satellite to separate a plurality of sub-signals from an input signal based on the filter parameter.

13. (Original) The apparatus of claim 12, wherein the filter parameter comprises at least one of a high frequency limit for the input signal, a low frequency limit for the input signal, a median frequency to separate a first sub-signal from a second sub-signal within the plurality of sub-signals, and a set of frequency boundaries for each of the plurality of sub-signals.

14. (Original) The apparatus of claim 13, further comprising:

a frequency translator within the satellite to translate the plurality of sub-signals into an output signal; and

a transmitter to transmit the output signal from the satellite.

15. (Original) The apparatus of claim 14, wherein:

the input signal comprises an uplink from a plurality of earth stations to the satellite, said plurality of earth stations comprising a gateway and a user station;

the output signal comprises a downlink from the satellite to the plurality of earth stations; and

the plurality of sub-signals comprise a first sub-signal and a second sub-signal, wherein the first sub-signal comprises a forward link from the gateway to the user station, and the second sub-signal comprises a return link from the user station to the gateway.

16. (Original) The apparatus of claim 14, wherein the frequency translator comprises:

a programmable amplifier to apply different gain amounts to selected ones of the plurality of sub-signals.

17. (Original) The apparatus of claim 14, wherein the plurality of sub-signals include a first sub-signal and a second sub-signal, and wherein the frequency translator comprises:

a first digital multiplier to multiply the first sub-signal by a first number to produce a first amplified signal;

a second digital multiplier to multiply the second sub-signal by a second number to produce a second amplified signal, said second number being different from said first number; and

a digital adder to add the first amplified signal and the second amplified signal.

18. (Original) The apparatus of claim 14, wherein the programmable filter comprises:

a sampler to sample the input signal at a sample rate to produce a stream of samples each having a particular number of bits; and

a processor to process each sample into the plurality of sub-signals.

19. (Original) The apparatus of claim 14, wherein the input signal comprises uplinks from a plurality of beams and the output signal comprises downlinks to the plurality of beams, and wherein the frequency translator comprises:

a switch matrix to switch the plurality of sub-signals from particular uplinks to particular downlinks.

20. (Original) The apparatus of claim 19, wherein the switch matrix assigns at least one of the plurality of sub-signals received from an uplink corresponding to a particular beam to a downlink corresponding to a different beam.

21. (Original) The apparatus of claim 12, further comprising:

a down-converter to receive an original signal at the satellite, said original signal having a first center frequency and a bandwidth, said down-converter adapted to down-convert the original signal to the input signal, said input signal having a second center frequency equal to one-half of the bandwidth plus a frequency margin, and said input signal having the bandwidth.

22. (Original) The apparatus of claim 21, further comprising:

an analog filter to receive an original signal at the satellite, said original signal having a bandwidth, said analog filter to filter the original signal into a plurality of N intermediate signals, each of the intermediate signals having 1/N of the bandwidth; and

a down-converter to down-convert each of the intermediate signals to a plurality of component signals, said plurality of component signals including the input signal, each of the component signals having a high frequency equal to 1/N of the bandwidth plus a frequency margin, and each of said component signals having 1/N of the bandwidth.

23. (Original) A communications device, comprising:

a receiver and a transmitter, coupled to each other, and each adapted for use in a high altitude environment; and

control circuitry, coupled to the receiver and transmitter, adapted to control operating characteristics of the receiver and transmitter based, at least in part, upon one or more instructions for allocating channel capacity between an uplink and a downlink.

24. (Original) The communications device of Claim 23, further comprising circuitry for monitoring the amount of forward and return traffic processed by the communications device.

25. (Original) The communications device of Claim 24, further comprising circuitry for generating instructions for allocating channel capacity between an uplink and a downlink based, at least in part, on the amount of forward and return traffic processed by the communications device.

26. (Original) A method of operating a communications system, comprising:

establishing a first portion of a frequency bandwidth to be received and processed by a satellite as a forward uplink, and a second portion of the frequency bandwidth to be received and processed by the satellite as a return uplink, the first and second portions comprising the total of the frequency bandwidth;

monitoring traffic volume on each of the forward and return uplinks;

determining a third portion of the frequency bandwidth to be received and processed by a satellite as a forward uplink, and a fourth portion of the frequency bandwidth to be received and processed by the satellite as a return uplink, the third and fourth portions comprising the total of the frequency bandwidth;

transmitting instructions to the satellite, the satellite including circuitry responsive to the transmitted instructions, such that the amount of frequency bandwidth allocated to the forward and return uplinks is allocated in proportion to the monitored traffic volume on each of the forward and return uplinks.

27. (Original) The method of Claim 27, wherein monitoring traffic volume, determining the third and fourth portions, and transmitting instructions, are performed by a gateway.

28. (Original) Apparatus, comprising:

means for receiving a filter parameter at a satellite in orbit;

means for receiving an input signal at the satellite; and

means for programming a filter in the satellite to separate a plurality of sub-signals from the input signal based on the filter parameter.

29. (Original) The apparatus of claim 28, further comprising:

means for filtering the input signal into the plurality of sub-signals as programmed based on the filter parameter;

means for translating the plurality of sub-signals into an output signal; and

means for transmitting the output signal from the satellite.

30. (Original) The apparatus of claim 28, further comprising:

means for receiving an original signal at the satellite, said original signal having a first center frequency and a first bandwidth; and

means for down-converting the original signal to the input signal, said input signal having a second center frequency equal to one-half of the bandwidth plus a frequency margin, and said input signal having the first bandwidth.

31. (Original) The apparatus of claim 28, further comprising:

means for receiving a first signal at the satellite, said first signal having a bandwidth;

means for down-converting the first signal to a first intermediate frequency (IF);

means for filtering the down-converted first signal so as to produce a plurality of N intermediate signals, each of the intermediate signals having 1/N of the bandwidth; and

means for down-converting each of the intermediate signals to a plurality of component signals, said plurality of component signals including the input signal, each of the component signals having a high frequency equal to 1/N of the bandwidth plus a frequency margin, and each of said component signals having 1/N of the bandwidth.

32. (Original) Apparatus for use in operating a communications system, comprising:

means for establishing a first portion of a frequency bandwidth to be received and processed by a satellite as a forward uplink, and a second portion of the frequency bandwidth to be received and processed by the satellite as a return uplink, the first and second portions comprising the total of the frequency bandwidth;

means for monitoring traffic volume on each of the forward and return uplinks;

means for determining a third portion of the frequency bandwidth to be received and processed by a satellite as a forward uplink, and a fourth portion of the frequency bandwidth to be received and processed by the satellite as a return uplink, the third and fourth portions comprising the total of the frequency bandwidth;

means for transmitting instructions to the satellite, the satellite including circuitry responsive to the transmitted instructions, such that the amount of frequency bandwidth allocated to the forward and return uplinks is allocated in proportion to the monitored traffic volume on each of the forward and return uplinks.